UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/924,011	08/07/2001	John R. DePhillipo	GNLK-02	1968

26875 7590 07/11/2007

WOOD, HERRON & EVANS, LLP
2700 CAREW TOWER
441 VINE STREET
CINCINNATI, OH 45202

EXAMINER	
KAUSHAL, SUMESH	
ART UNIT	**PAPER NUMBER**
1633	

MAIL DATE	DELIVERY MODE
07/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/924,011	DEPHILLIPO ET AL.	
	Examiner	Art Unit	
	Sumesh Kaushal Ph.D.	1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 May 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-17,20-27,30-33,63 and 65-68* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-17, 20-27, 30-33, 63 and 65-68* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's Remarks and Dr. Ricciardi's declaration filed on 05/16/07 has been acknowledged and fully considered.

Claims 1-13, 18-19, 28-29, 34-62 and 64 are canceled.
Claims 65-68 are newly filed.
Claims 14-17, 20-27, 30-33, 63 and 65-68 are pending and are examined in this office action.

Applicants are required to follow Amendment Practice under revised 37 CFR §1.121. The fax phone numbers for the organization where this application or proceeding is assigned is ***571-273-8300.***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The references cited herein are of record in a prior Office action.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims *14-17, 20-27, 30-33, 63 and 65-68 are* rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 30-33 are indefinite because claim 30 depends upon canceled claim 1.

Claim 63 are indefinite because claim 64 depends upon canceled claim 1.

Claim 65 is indefinite because it is unclear what are the metes and bounds of "a polymorphic form identified as associated with any pathology" as recited in the lines 1-2 of the instant claim.

Claim 65 is indefinite because it is unclear what encompasses "calculating a susceptibility value for the condition by either summing the identified polymorphisms to

yield a value for the human, or assigning a weighting factor to each polymorphism and then summing the weighting factors to yield a value for the human". For example it is unclear what is the criterion used to yield polymorphism values and weighing factors especially in the context of a control. Furthermore it is unclear what are the metes and bounds of the control.

The term "relative degree" in claim 65 is a relative term, which renders the claim indefinite. The term "relative degree" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim 67 recites the limitation "the disorder-associated polymorphism" in 2-3. There is insufficient antecedent basis for this limitation in the claim.

Claim 68 indefinite because it is unclear what encompasses "score correlating polymorphism homozygosity and a bone density associated disorder"

Claim 26 is indefinite because it is unclear what is the criterion used to calculate the susceptibility value for the gene encoding Vit.D Receptor and the gene encoding IL-6. For example it is unclear what encompasses "the product of a constant and correlation factor".

Claim 14 is indefinite because there is no nexus between the "occurrence of an individual disorder associated polymorphism" and the method of claim 65.

Claim 14 is indefinite because it is unclear what are the oligonucleotides encompassing disorder associated polymorphism and non-disorder associated polymorphism.

Claim Rejections - 35 USC § 112

Claims *14-17, 20-27, 30-33, 63 and 65-68* are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims *14-17, 20-27, 30-33, 63 and 65-68* are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention

Response to arguments (*Written description and Enablement)*

The applicant argues that in view of recent claim amendment the current written description and enablement rejections are moot. The applicants have included a Declaration under 37 C.F.R. §1.132. The Declaration states that one skilled in the art would know, or could determine without undue experimentation, a sequence for each of a human gene encoding a vitamin D receptor and a human gene encoding interleukin-6. The Declaration states that one skilled in the art could determine, without undue experimentation, if a polymorphism in a human gene encoding a vitamin D receptor and a human gene encoding interleukin-6 was identified as associated with a pathology.

However the applicant's arguments are found not persuasive. The scope of invention as claimed encompasses "assessing a relative degree to which a human is susceptible to an undesirable bone density condition by identifying a polymorphic form identified as associated with any pathology in any gene-variant encoding a vitamin D receptor and any gene-variant encoding interleukin-6 present in the human's genome" which requires the possession of any and all polymorphic genetic sequences associated with a human gene encoding a vitamin D receptor and a human gene encoding interleukin-6 in context of any pathology. The specification fails disclose any variants of gene encoding vitamin D receptor and interleukin-6 which one skilled in the art would use to practice the invention as claimed. Furthermore the specification as filed fails to disclose first and second oligonucleotides especially in context of any and all variants gene encoding vitamin D receptor and nterleukin-6 which would further enables one skilled in the art to practice the invention as claimed without further undue amount of experimentation.

In analyzing whether the written description requirement is met for the genus claim, it is first determined whether a representative number of species have been described by their complete structure. The specification fails to disclose representative number of species by structure and function encompassed by genus as claimed. Claiming all divergent species that achieve a result as contemplated by the application without defining the representative number of species by structure and function is not in compliance with the written description requirement. Rather, it is an attempt to preempt the future before it has arrived. "The written description requirement has several policy objectives. The essential goal' of the description of the invention requirement is to clearly convey the information that an applicant has invented the subject matter which is claimed." In re Barker, 559 F.2d 588, 592 n.4, 194 USPQ 470, 473 n.4 (CCPA 1977). Another objective is to put the public in possession of what the applicant claims as the invention. See Regents of the University of California v. Eli Lilly, 119 F.3d 1559, 1566, 43USPQ2d 1398, 1404 (Fed. Cir. 1997), cert. denied, 523 U.S. 1089 (1998)."

To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail such that the Artisan can reasonably conclude that the inventor(s) had possession of the claimed invention. Such possession may be demonstrated by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and/or formulae that fully set forth the claimed invention. *Possession may be shown by an actual reduction to practice, showing that the invention as claimed is "ready for patenting", or by describing distinguishing identifying characteristics sufficient to show that applicant was in possession of the claimed invention* (see January 5, 2001 Fed.Reg., Vo.66, No. 4, pp. 1099-11). In instant case the specification fails disclose any variants of gene encoding vitamin D receptor and interleukin-6 which one skilled in the art would use to practice the invention as claimed to make and use any set of first and second oligonucleotides especially in context of any and all variants gene encoding vitamin D receptor and nterleukin-6 and associated disorders without further undue amount of experimentation.

Since the specification fails to disclose nucleotides required to practice the instant invention, defined by structure and function, it is not possible to envision the

claimed composition. One cannot describe what one has not conceived. (See Fiddes v. Baird, 30 USP2d 1481 at 1483). According to these facts, one skill in the art would conclude that applicant was not in the possession of invention as cliaimed

Regarding the enablement issues, even though candidate gene association studies are relatively easy to perform, the disadvantages include the possibility of false positive (or false negative) results due to confounding factors and population stratification. The applicant fails to consider that the demonstration of an association between a candidate gene and BMD does not necessarily mean that the gene is causally responsible for the effect observed. Associations can also occur as the result of linkage disequilibrium with a causal gene situated nearby on the same chromosome. (See Ralston J Clin Endocrinol Metab. 87(6):2460-6 2002, Zajikova et al Endocr Regul. 37(1):31-44, 2003). Thus the burdens shifts to applicant to establish that the one skilled in the art would able to practice the invention as claimed in view of limited amount of guidance provided in the specification without further undue amount of experimentation.

For example The specification fails disclose any variants of gene encoding vitamin D receptor and interleukin-6 which one skilled in the art would use to practice the invention as claimed. In addition the specification as filed fails to disclose the identity of first and second oligonucleotides especially in context of any and all variants gene encoding vitamin D receptor and interleukin-6 which would further enables one skilled in the art to practice the invention as claimed without further undue amount of experimentation. At issue, under the enablement requirement of 35 U.S.C. 1 12, first paragraph is whether, given the Wands-factors, the experimentation was undue or unreasonable under the circumstances. "**Experimentation must not require ingenuity beyond that to be expected of one of ordinary skill in the art.**" See Fields v. Conover, 443 F.2d 1386, 170 USPQ 276 (CCPA 1970).

Thus considering the state of the art which teaches that demonstration of an association between a candidate gene and BMD does not necessarily mean that the gene is causally responsible for the effect observed. The specification even fails to establish any bone density condition (i.e. osteophorosis or high bone mass) associated with all polymorphic gene associated with Vitamin D receptor and Interleukin-6 genes.

Similarly, the specification fails to provide any evidence that establishes the association of any undesirable bone density conditions associated with the occurrence of a thymine residue 8 residues upstream of the normal start codon of the gene encoding vitamin D receptor and a cytosine residue at position -174 of the interleukin-6 gene promoter. The disclosure "shall inform how to use, not how to find out how to use for themselves." See In re Gardner 475 F.2d 1389, 177 USPQ 396 (CCPA 1973). Considering the instant specification it is even unclear how bone density is affected by the presence of these SNPs. In addition, the specification fails to provide any evidence, which establishes that assessment of these SNPs in combination would be a better predictor of assessing an undesirable bone density as compared to identification of a single SNP.

It is noted that patent protection is granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable (*See Brenner v. Manson, 383 U.S. 519, 536, 148 USPQ 689, 696 (1966), Stating, in context of the utility requirement, that "**a patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion.**"*) Tossing out the mere germ of an idea does not constitute enabling disclosure. While every aspect of a generic claim certainly need not have been carried out by an inventor, or exemplified in the specification, reasonable detail must be provided in order to enable members of the public to understand and carry out the invention.

Furthermore, USPTO does not have laboratory facilities to test if an invention will function as claimed when working examples are not disclosed in the specification, therefore, enablement issues are raised and discussed based on the state of knowledge pertinent to an art at the time of the invention, therefore skepticism raised in the enablement rejections are those raised in the art by artisans of skill. The specification fails to enable one skill in the art to practice the invention as claimed without further undue amount of experimentation.

In instant case assessing any undesirable bone density conditions by genetic analysis of Vitamin D receptor and IL-6 genes (as claimed) is not considered routine in the art and without sufficient evidence that the combination of SNPs encoding any variant of Vitamin D receptor and IL-6 genes (especially in context of any pathology)

would be a better predictor of assessing an undesirable bone density, the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988). It is noted that the unpredictability of a particular area may alone provide reasonable doubt as to the accuracy of the broad statement made in support of enablement of claims. See Ex parte Singh, 17 USPQ2d 1714 (BPAI 1991). Therefore considering the state of the art and limited amount of guidance provided in the instant specification, one skill in the art would have to engage in excessive and undue amount of experimentation to exercise the invention as claimed.

Conclusion

No claims are allowed.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sumesh Kaushal Ph.D. whose telephone number is 571-272-0769. The examiner can normally be reached on Mon-Fri. from 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach can be reached on 571-272-0739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SUMESH KAUSHAL
PRIMARY EXAMINER